

## FIELD EMISSION BACKPLATE

### ABSTRACT

A field emission backplate formed by laser crystallizing of an area of amorphous semiconductor based material. Emitter sites result from the rough surface texture caused by the crystallization process. The crystallization may be localized using laser interferometry, and profiled emitter tips grown on the localized crystalline areas. Such backplates can be used in field emission devices emitting into either a vacuum or a wide band gap light-emitting polymer. Furthermore, a backplate having self-aligned gates can be formed by depositing an insulator layer and a metal layer over the emitter tips, removing the top of the metal layer and etching away the insulator, leaving each tip surrounded by a metal rim. A planarizing agent can be used to refine this process.

### CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of International application PCT/GB02/03691 filed August 9, 2002, the entire content of which is expressly incorporated herein by reference thereto.